Public Transport Issues in Melbourne
Why Melbourne Metro and Grade Crossings are not the only concerns for Melbourne

Prof Graham Currie
Public Transport Research Group
Institute of Transport Studies
Monash University

Introduction
Transport in Melbourne
Public Transport in Melbourne
The Drivers of Change
The Future
This presentation provides an overview of public transport in Melbourne...

Key Issues Covered
- What is the transport context of Melbourne?
- What are the major public transport problems in service provision and development
- How are services likely to develop in future?

...and is structured as follows
Introduction

Transport in Melbourne

Public Transport in Melbourne

The Drivers of Change

The Future

Melbourne is a car based society – 75% of trips are by car

Source: Melbourne on the move – VATS 1994
Car vehicle sales and ownership continue to rise

Figure 7.2: New passenger vehicle sales 2001-2005 (FCAI, 2006)

Figure 10.4: Revised projected per capita Australian motor vehicle ownership (BTRE, 2002, p.15)

Urban traffic congestion in Melbourne costs $3B p.a. (2005) and will double by 2020

Source: BTRE (2006)
Congestion ‘hotspots’ are expected to spread spatially....

Figure 3.1  Modelled congestion hotspots on arterial roads in Melbourne, 2004 (am peak)

Figure 3.2  Modelled congestion hotspots on arterial roads in Melbourne, 2021 (am peak)


....and in Time

Figure 3.3  Peak spreading on Melbourne’s freeways

Source: VicRoads.

While all developed economies are affected, in Australia impacts are greater...

![Relative Costs of Congestion graph]

Relative Costs of Congestion

**Percent of GDP (2001)**

- Australia: 2.6
- United States: 1.5
- Western Europe: 1.9
- OECD Average: 2

**Developed Economies**


...due to higher car dependency, low urban density, and.....

![Motor Vehicle Ownership and Urban Density graphs]

**Motor Vehicle Ownership**

- USA: 102
- New Zealand: 90
- Australia: 79
- France: 65
- Spain: 63
- Austria: 59
- Netherlands: 59
- Sweden: 48
- Greece: 38
- Czech Republic: 18
- Slovak Republic: 14

**Urban Density**

- New York: 102
- Tokyo: 90
- Chicago: 79
- Singapore: 65
- Hong Kong: 63
- London: 59
- San Francisco: 59
- Paris: 48
- Berlin: 38
- Sydney: 18
- Melbourne: 14
- Brisbane: 10

Source: OECD Factbook (2006)

Source: The Economist - Submission to the VCEC Inquiry into Managing Transport Congestion (2006)
...because our cities are GIGANTIC in scale.

Metropolitan Melbourne = 4M pop

Greater London = 8.4M pop

Introduction

Transport in Melbourne

Public Transport in Melbourne

The Drivers of Change

The Future
Buses ARE Melbourne’s public transport for most residents, which is a problem....

- Over two thirds of Melbourne can only be serviced by bus services since rail and tram services lie considerable distances from where people live or where they want to travel to.
- In 1996 the Metropolitan strategy team identified that 2.16M Melbournians lived in areas where buses were the only means of access to public transport. 0.98M lived within access distance of rail services.

...because there aren't many

- Over two thirds of Melbourne can only be serviced by bus services since rail and tram services lie considerable distances from where people live or where they want to travel to.
- In 1996 the Metropolitan strategy team identified that 2.16M Melbournians lived in areas where buses were the only means of access to public transport. 0.98M lived within access distance of rail services.

<table>
<thead>
<tr>
<th>Weekday Service Frequency (2006)</th>
<th>Weekday Service Span</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak</td>
<td>Off Peak</td>
</tr>
<tr>
<td>AV. MELBOURNE</td>
<td>40m</td>
</tr>
</tbody>
</table>
The bus network on weekdays...

Weekday Bus Services

Source: Currie (2003)

...contrasts somewhat with weekends

Sunday Bus Services

Source: Currie (2003)
Frequency drives Australian ridership performance


In general our bus service level is poor compared to world practice

Tram services are struggling in growing traffic congestion


Melbourne is the world’s biggest “streetcar” system

Mixed Traffic service impedes performance

Average Operating Speeds – World Tram/Light Rail Systems

Melbourne Tram Reliability
- 33% of services are considered to be NOT running on time
- On time defined as arriving more than 1 min early of more than 6 mins late

Source: UITP Databank

Source: Track Record
Better performing railways are built on new not old infrastructure and strong resilience/reliability.

**Average Speed (Kph)**

- Melbourne: 53
- Singapore: 45
- Hong Kong: 52.6
- Perth: 55

**Breakdowns in Service (000 kms)**

- Melbourne: 4
- Sydney: 50
- Best Practice: 100
- Singapore: Never Recorded
- Hong Kong: Never Recorded

...yet expanding rail, thus making it more complex, has been our approach to mass transit expansion.
Unplanned disruptions are common; e.g. reported signal faults; 1,900 p.a. (5+/day)

Source: Adam Carey, The Age, ‘Signal failures are causing chronic rail delays’ 23/10/2013

Metro Trains
“We are installing advanced computer technology which improves control of the signalling system, but our field equipment is outdated and requires replacing.”

Melbourne rail demand growth has been impressive by any standard

Source: Department of Transport/ Public Transport Victoria Annual Reports
However the rail network has reached capacity

How Transit Orientated is Melbourne Development?

**Density**  
- the concentration and compactness of development within geographic space

**Diversity**  
- the land use mix including the balance and compatibility of users with each other (and transit)

**Design**  
- which relates how the various land uses are combined, linked and presented in terms of ease of access and attractiveness

Source: Cervero and Kockleman (1997)
The Transit Orientation of Development – OVERALL Melbourne – only in central areas

So what do passengers think about these issues?
PERFORMANCE MINUS IMPORTANCE RATINGS SPIRAL PLOT

Lowest Importance
- Comfortable with strangers on PT
- Travel time compared to car
- Can make trips to new places on PT
- Physical access
- Staff courteous and friendly
- Overcrowding
- Ease of buying/using ticket
- Available at night
- People I care for can use it safely
- Information to plan journey
- Meet costs

Highest Importance
- Safe at night
- Frequency
- Safe during day
- PT available where and when needed
- Deal with disruptions quickly
- Get to stops/stations
- Quality of service
- Make connections
- Available on weekends
- Get information about PT
- Disruptions don’t happen often

Variation in Perceptions of Urban Public Transport Performance Between International Cities Using Spiral Plot Analysis TRANSPORTATION RESEARCH RECORD

Introduction
Transport in Melbourne
Public Transport in Melbourne
The Drivers of Change
The Future
Growth in urban travel and car ownership continues to rise

- Since 1996 car travel has increased at 1.9% p.a. (Challenge Melbourne - issues in metropolitan planning for the 21st century Oct 2000)
- Forecasts suggest metropolitan travel will increase by around 20% by 2020 without action to address current trends (NCCC Study)

Meanwhile road freight volume is expected to double in 20 years

- Melbourne road freight movements total around 170M tonnes p.a.. This has grown by 120% between 1971 and 1997.
- Truck traffic forecast to double over the next 20 years (Challenge Melbourne)
- The efficient movement of commercial traffic has been directly linked to a competitive economy and the affordability of consumer products
We have also stopped being active – this has led to ‘the epidemic of obesity’

Lifestyle underpins Australia’s growing obesity problem

The Dieticians Association of Australia says television and less active lifestyles have contributed to increased rates of obesity. The Australian Institute of Health and Welfare (AIHW) has released a report showing nine million adult Australians carry excess weight.

The report estimates at least 16 per cent of men and 17 per cent of women are obese, with a further 42 per cent of men and 25 per cent of women considered overweight.

Ms Collins says lifestyles have changed significantly over the last century. “We use our cars more, most people have jobs where they sit down, most of us don’t do as much work around the house, or even the yard. "There just aren’t the same opportunities to be active."

Source: ABC News Online – September 2003

Road dominates increasing greenhouse emissions - BIG change is needed to meet the ‘Stern’ Target

To stabilise at 450ppm CO2e, without overshooting, global emissions would need to peak in the next 10 years and then fall at more than 5% per year, reaching 70% below current levels by 2050. - Sir Nicholas Stern
Research suggests that as fuel prices rise a high share of Melbourne residents are being marginalised


Monash research has highlighted ‘forced car ownership’ in fringe urban Australia

Key Findings - FCO
- Over 20,000 Melbourne households with income <$500/week running 2+ cars
- Zero/Very Low Public Transport
- ‘Forced Car Ownership’ - No choice
- Growing as fuel prices rise
- Even modest public transport access can reduce forced car ownership

Source: Currie and Senbergs (2007)
Introduction

Transport in Melbourne

Public Transport in Melbourne

The Drivers of Change

The Future

Since 2001 PT service increased 63% (66% bus/ 36% rail, 10% tram) but - but population growth continues at a faster pace...

Index of Public Transport Service Kms p.a (2001-2=100)  

Population Growth (M)  

Source: Department of Transport/ Public Transport Victoria Annual Reports
...in last 10 years, per capita service increased to 22% but declined since 2011 (we have gone down by 9% points); recent trend is flat.

Source: Department of Transport/ Public Transport Victoria Annual Reports

Melbourne is expected to increase in size by another 1-2M people in 20-30 years.

Source: Victoria in Future (2012)
Melbourne Metro; exciting but capacity upgrade is long overdue now – current start date is 2026!

Melbourne rail grade separations; exciting some capacity relief but not an increase in service
Monash Research – Delay Impacts of Grade crossings in Melbourne

Localised variation in traffic travel time delay caused by at grade rail crossings

Source: PhD research of Phuoc Quy Duy Nguyen

Where is tram and bus priority? – SmartBus; downgraded?
About World Transit Research

World Transit Research (WTR) is designed to help public transport practitioners and researchers get easier access to quality research in the field of public transport planning. WTR is a free repository of research papers, reports, research abstracts and links to research findings from leading research journals instead and searchable to ensure easier access to topics of interest. The site is developed and run by the Public Transport Research Group at the Institute of Transport Studies, Monash University.

Browse Research

Subject Areas
Authors
Titles

At a Glance

Top 10 Downloads
At time

Recent Additions
20 most recent additions

www.worldtransitresearch.info

Also: New PTRG website
PTRG.INFO
Join the **ITS (Monash) LinkedIn group** to keep informed of our activities.